BULLETIN
OF THE
TORREY BOTANICAL CLUB.

Vol. XVII.] New York, February 5, 1890. [No. 2.

Plant Notes from Tadousac and Temiscouata County, Canada.

By John I. Northrop and Alice B. Northrop.

The little village of Tadousac is beautifully situated at the junction of the Saguenay and the St. Lawrence. The latter river here forms quite a deep bay, on the curving shores of which stands the main part of the village, while on the jutting rocky point that separates the bay from the mouth of the Saguenay, are the picturesque cottages of the French fishermen and half-breeds. Just south of the village the banks become very steep and here, far above the present beach, are two, and in some places, three very fine terraces, stretching around the point of the bay and for some distance down the St. Lawrence. Back of all rise the lofty hills of the Saguenay. Our first walk was out on the headland at the mouth of the latter river, and here, at the level of the sea, we found many of the alpine plants of Mt. Washington; among these were *Potentilla tridentata*, *Euphrasia officinalis* and *Vaccinium Vitis-Idæa*. Great mats of *Empetrum nigrum* grew on the rocky banks and beautiful Campanulas nodded from the crevices. We were interested in observing that here *Campanula rotundifolia* bore only a single flower at the summit, and resembled but slightly the large and many-flowered plants, two feet in height that we had collected in Crawford Notch, and also very different apparently from the little blue bells, three inches high, that grow near the Lake of the Clouds on Mt. Washington, and bear but a single *erect* flower, of a very dark blue color.

We found much the same difference in the forms of *Euphrasia officinalis*. We had first collected it a few weeks previous, near Oakes' Gulf on Mt. Washington, and there, though mature, it was so tiny that in order to find it we had literally to get down on our hands and knees, and go over the ground inch by inch. At Tadousac we collected the usual small bushy Canadian form and a week or two later, at Lake Temiscouata, found some specimens about 8 inches high. Besides this alpine flora, there were many

maritime plants. *Plantago maritima* and *Triglochin maritimum* were common, *Tissa salina* grew on the tide flats, and *Lathyrus maritimus* over the rocks on the beach. But most beautiful of all were the great spreading clusters of *Mertensia maritima*, with its graceful trailing branches, glaucous foliage, and showy blue flowers.

Higher up on the rocks were great patches of *Kalmia angustifolia*, making masses of pink bloom; with these grew *Ledum latifolium* and *Cassandra calyculata*, both in fruit, while shading these tangled thickets, were *Pinus Banksiana*, the white spruce, and the black spruce. Trailing over the rocks we found *Juniperus Sabina*, var. *procumbens*, in fruit, and the prostrate variety *alpina* of *Juniperus communis*.

The yellow blossoms, and curious inflated pods of *Rhinanthus Crista-galli* were common near the shore, and in the wet grassy spots *Microstylis unifolia* grew plentifully. Along the Saguenay we collected *Ranunculus Cymbalaria*, and in the crevices of the rock *Aspidium fragrans* was found growing in large tufts, still holding last years leaves, and *Corallorhiza innata*. Here we also collected *Comandra livida* and *Goodyera repens*.

On the border of a small pond near Tadousac, *Polygonum amphibium* was found and in the bogs near the shore we saw *Eriophorum gracile*, and with it the purple-flowered *Potentilla palustris;* also *Calla palustris*, but the flowers had already gone and we could only get the fruit. Although it was the last week in July, we noticed that the little birches on the hillsides near Tadousac had begun to turn yellow, showing that the brief northern summer was already on the wane.

A sail of three hours brought us to Riviere du Loup, and the next morning we botanized along the banks of the rapid flowing stream that gives the town its name. In one place it makes a plunge of about 40 feet over the edges of the dark slaty rock which forms its bed, and here under the hemlocks we found *Moneses uniflora*, the bright blue berries of *Clintonia*, *Coptis trifolia* and *Halenia deflexa*.

Our train left Riviere du Loup about noon, and we were soon speeding towards Lake Temiscouata, some fifty miles to the southeast. At first poplars, birches and spruces were plenty, but as we neared the lake we passed through great swamps of *Thuja*

occidentalis, some of the trees being the largest we had ever seen. In the cleared places were large patches of *Cnicus arvensis*, *Epilobium spicatum* and great masses of the gorgeous yellow heads of *Sonchus arvensis*, while in places *Vicia Cracca* covered the grass and low shrubs with a mantle of blue. After a ride of nearly three hours, we alighted at our destination, the little village of Notre Dame du Lac, prettily situated on the curving shore of Lake Temiscouata.

Two lists of plants from this region have already appeared in the BULLETIN, the first by John I. Northrop, in November, 1887, the second by Henry M. Ami, in May, 1888.

On my previous visit, in one place near the shore, I collected an exotic labiate, which was not determined as the specimen was in fruit, but this year we found the same species, now evidently well established and holding its own in a dense growth of *Galeopsis Tetrahit* and *Amarantus*. It has curious one-sided spikes of blue flowers, and a peculiar lemon-like odor. We sent some specimens to Dr. Britton, who wrote in reply that it was *Elsholtzia cristata*, a native of Siberia, and belonged near our genus *Collinsonia*. We found it growing in a clearing near a mill, and there is no doubt but that it has been introduced. Still, there are no records of its ever being cultivated, and how it reached this out-of-the-way spot is a mystery.

Near by on the banks of a brook, *Listera convallarioides* grew abundantly and on the hillside above we found a few specimens of *Pyrola chlorantha*. Great beds of *Cornus Canadensis* grew here, as almost everywhere in Canada, and we noted that here, as elsewhere, we could not find a *single four-leaved* plant that bore a flower. We had been struck with this fact while botanizing in the White Mountains, and had made it a special point of observation all summer, but out of the hundreds of plants which we examined not one exception did we find to this rule.

One day we took our canoe and paddled some three miles down the opposite shore of the lake and here, growing among the moss along a little brook, we found the rare *Selaginella spinosa*, looking very much like a delicate *Lycopodium*. Farther up the lake on the way to Mount Wissick we found a number of plants of *Equisetum littorale*. The specimens have

since been carefully examined and compared with those so named by Dr. Morong and they are undoubtedly the same species. On our way to Mount Wissick we passed over a shallow portion of the lake and a better place to collect water plants could not readily be found. The bottom was in some places gravelly and in others of sandy clay. The water was beautifully clear, but two or three feet in depth. We found here five *Potamogetons: P. pectinatus, P. gramineus, P. amplifolius, P. natans and P. perfoliatus*, the delicate *Ranunculus aquatilis*, var. *trichophyllos*, and two species of *Chara*. Here and there the spikes of the great Bulrush, *Scirpus lacustris*, rose six or seven feet above the surface of the water.

Most beautiful of all were the *Myriophyllums;* one of these, *verticillatum* grew near our camping place in great masses and we could look down into the clear water and trace the long, feathery unbranched stems until they reached the sand, some seven or eight feet below.

Another species, more slender and growing in much shallower water, we have since determined as *Myriophyllum alterniflorum*. Attention has been called to this interesting species by Dr. Morong in a previous number of the BULLETIN, (xiv. 51.) where he states that it has been found in Lake Memphremagog, Canada, by Mr. J. R. Churchill, but previously had been collected no nearer to us than Greenland.

Well pleased with our morning's spoils, we paddled on a mile or so further, until we found a good camping place, when we disembarked and soon started for the top of "la grosse montagne."

Our trail led up through the usual growth of balsam, white spruce, and *Betula papyrifera*; here and there the ledges were luxuriously carpeted with *Cladonia rangeriferina*. Higher up we found dozens of specimens of *Habenaria Hookeriana*, and even more abundant was *Corallorhiza multiflora*. We also found some few spikes of *C. innata*. About 550 feet above the lake we found some plants of *Epigæa repens* (the first we had seen in Canada) surrounded by *Vaccinium Pennsylvanicum*, *Kalmia angustifolia* and *Ledum latifolium*, and shaded by black and white spruces. Among the crannies of the upper ledges we found *Woodsia Ilvensis, W. hyperborea, Pellæa gracilis* and *Aspidium fragrans*.

The summit was shaded by very fine specimens of the red pine, *Pinus resinosa.* The next day we worked up our plants, collected some fossils from the ledges at the foot of the mountain, and later on in the afternoon started back for Notre Dame du Lac. The few remaining days we spent there were devoted to grasses and sedges—there was not a very great variety of either, however, and their names will be found in the appended list.

The following list contains the plants collected that have not been mentioned in the former lists. Unless otherwise stated the locality is in the vicinity of Notre Dame du Lac.

Ranunculus reptans,
Coptis trifolia.
Nymphæa advena.
Nasturtium palustre.
Silene noctiflora.
Hypericum ellipticum.
Trifolium hybridum.
Astragalus oroboides,
var. *Americanus.*
Amelanchier Canadensis,
var. *rotundifolia.*
Chrysosplenium Americanum.
Ribes prostratum.
Myriophyllum verticillatum.
M. alterniflorum.
Osmorrhiza brevistylis.
Heracleum lanatum.
Carum Carui.
Galium asprellum.
Erigeron Philadelphicum.
Gnaphalium uliginosum.
Lobelia Dortmanna.
Epigæa repens, Mt. Wissick.
Pyrola elliptica.
P. rotundifolia.
P. chlorantha.
Hypopitys Monotropa.
Fraxinus sambucifolia.
Veronica serpyllifolia.
V. scutellata.
Verbascum Thapsus.
Mentha sativa.
Elscholtzia cristata.
Apocynum androsæmifolium.
Chenopodium capitatum.
Fagus ferruginea.
Listera convallariodes.
Microstylis unifolia.
Corallorhiza innata.
Goodyera repens.
Habenaria orbiculata.
Trillium erectum.
Juncus nodosus.
J. tenuis.
J. bufonius.
Potamogeton amplifolius.
P. gramineus.
P. perfoliatus.
P. pectinatus.
Carex intumescens.
Carex retrorsa.
C. stipata.
C. tentaculata.
Scirpus atrovirens.
Eriophorum cyperinum.
Dulichium spathaceum.
Eleocharis palustris.
E. ovata.
Phleum pratense.
Agrostis alba.
A. hiemalis,
Deschampsia cæspitosa.
Poa serotina.
Bromus ciliatus.
Agropyrum repens.
Taxus baccata var. *Canadensis.*
Abies Mariana.
Equisetum arvense,
E. limosum,
E. littorale.
E. pratense,
E. scirpoides,

Polypodium vulgare.
Pellæa gracilis.
Aspidium fragrans.
Woodsia Ilvensis. Mt. Wissick.
W. hyperborea, Mt. Wissick.
Botrychium Virginicum, var. *gracile,* Mt. Wissick.
Lycopodium annotinum.
L. lucidulum.
Selaginella spinosa, Lake Temiscouata.

Some Further Notes on the Flora of the Rangeley Lakes.

I have been especially interested in Mr. Johnson's notes on the flora of the Rangeley Lake region published in the October number of the BULLETIN, because some years ago I spent the month of September in one of the camps on Lake Molechunkamunk,—the same lake on which his camp was placed. Our observations were made therefore in much the same region, but at different seasons of the year, so perhaps on this account a few notes of the plants I observed may be a fitting supplement to his statements.

I was too late for grasses, sedges, and orchids, and on my list therefore I find few species, if any, noted. For some reason or other the ferns seem to have been neglected in my collections, perhaps because not abundant, as Mr. Johnson suggests. I find six species of Lycopodium, however, fully as many as could be expected.

In addition to the Ranunculaceæ mentioned I may name *Clematis Virginiana; Thalictrum polygamum; Coptis trifolia; Actæa spicata* var. *rubra,* and *A. alba.* The three species last named were not uncommon in the deep woods.

Two species belonging to the Scropulariaceæ—*Chelone glabra* and *Veronica scutellata*—and four indigenous species of Labiatæ —*Mentha Canadensis, Lycopus Virginicus, Scutellaria lateriflora,* and *Brunella vulgaris*--were all I found belonging to these families. Thoreau, if I remember rightly, speaks of the monkey-flower (*Mimulus ringens*) as abundant throughout this region, but I saw no trace of it. These two families therefore seem poorly represented, as Mr. Johnson states. Like him, I found no indigenous species of Leguminosæ. I found the Liliaceæ, the Polygonaceæ, the Rosaceæ, the Ericaceæ and the Compositæ all fairly represented for a woodland region. Of the Liliaceæ, *Trillium erectum* and *T. erythrocarpum;* the two species of *Streptopus; Clintonia borealis,* were all common. *Lilium Cana-*

dense and *Veratrum viride* were noted on the lake road from Andover. The latter is an extremely common plant in the Andover region further south. Of the Polygonaceæ *Polygonum amphibium* was the most interesting species. It was very abundant in a marshy inlet of the lake. Of the Rosaceæ, *Geum rivale*, *Agrimonia Eupatoria*, *Fragaria vesca*, and *Potentilla Norvegica* were perhaps the most noteworthy herbaceous species. *Rosa lucida* and *R. Carolina* were both common. I should now expect to find *R. nitida* as well. The list of Compositæ is large in proportion to the other lists. The golden rods most noticed were *Solidago latifolia*, *S. lanceolata*, *S. juncea*, and *S. rugosa*; while the asters were fewer in number—*A. macrophyllus*, *A. puniceus*, *A. acuminatus*, and *A. umbellatus* being the most common species. *Eupatorium purpureum* was common, but *E. ageratoides* was rare and local. *Hieracium Canadense*, *H. scabrum*, *Lactuca Canadensis*, and *Prenanthes altissima* were not uncommon among wood plants.

Other plants having more or less interest were *Brasenia peltata*, which fairly choked a small pond in the vicinity; *Sarracenia purpurea*; *Corydalis sempervirens*; *Drosera rotundifolia* and *D. intermedia* var. *Americana*; *Hypericum ellipticum* and *H. mutilum*; *Impatiens aurea*; *Sium cicutæfolium*; *Cicuta bulbifera*; *Aralia racemosa*; *Galium asprellum*; *Houstonia cærulea*; *Lobelia Dortmanna* and *L. inflata*; *Utricularia cornuta*; *Apocynum androsæmifolium*; *Sparganium simplex*, and *Sagittaria variabilis*. Many of these Mr. Johnson probably observed as well. I agree with him when he mentions the apparent paucity of species—for my list includes a little less than two hundred—but am sure that both his list and my own might be much increased by a longer search. There are many small bogs and marshy ponds that would doubtless yield many species of water plants if any one took the pains to explore them. While the deep-wood flora is not of great variety, yet certain species must be present that could be found by careful search.

On the mountains in the neighborhood some interesting plants must occur. The only one I recall is *Arenaria Grœnlandica*, which I found on Mount Aziscoos, and which is also reported on Bald Pate Mount, near Andover, by the Rev. J. W. Sture.

In the small clearings and settlements on the lakes a number of weeds and other introduced plants have appeared. This was an extremely interesting part of the flora to me, and I therefore made as full a list as possible of the species observed. The invading army was then small in number and few in species, but is likely here as elsewhere to more than hold its own as long as the clearings are open to the sun. I mention a few of these invaders to show how our common weeds travel in the footsteps of man:—*Ranunculus acris; Capsella Bursa-pastoris; Stellaria media; Spergula arvensis; Trifolium pratense*, and *T. repens; Sedum Telephium; Achillea Millefolium; Chrysanthemum Leucanthemum; Taraxacum officinale; Tanacetum vulgare; Cnicus arvensis* and *C. lanceolatus; Plantago major; Galeopsis Tetrahit; Polygonum Persicaria;* and *Rumex Acetosella.* All these species were collected at the Upper Dam, except *Spergula arvensis*, which was seen only at Indian Rock, some miles farther north. Most of them, however, appeared as well in other inhabited clearings, and often about the logging camps in the woods.

I have not spoken of the trees and shrubs, for the species observed were those that any one would expect to find in the northern woods. The whole region is much devastated by the lumbermen, and little pine have they left behind them. The poplar and the spruce are now being attacked, and I suppose in time this country will lose much of the wild beauty that is now one of its greatest charms. EDWARD L. RAND.

Notes on Castilleia.

BY T. D. A. COCKERELL.

These singular plants, with their variously colored bracts and comparatively inconspicuous flowers, are very numerous in the West, and exceedingly variable. In Custer County, Colorado, we have at least three species—possibly more, while each one of these presents interesting varieties or forms. About West Cliff, rather below 8,000 feet alt., one finds in the meadows and on the prairies scarlet and pale yellow species. The scarlet-bracted species, which grows mainly on dry land, is *C. integra*, Gray; the other taller, and with pale yellowish bracts, is *C. pallida*

var. *acuminata*.* This latter species prefers damper ground, and affords food for certain Lepidopterous larvæ. Leaving the open ground, we may now ascend to about 8,200 feet, where the pine timber begins at the base of the Sangre de Cristo Range. We at once meet with a different form, which is rather like *integra*, but taller and more slender, and otherwise peculiar. Failing to fit it with any known species, I will call it for the present *C. integra* var. *gracilis*.† This is the first sign of increase of altitude, which, added to the effect of the timber, with moisture and shade, has produced this taller form with deeply incised bracts.

Let us now follow up Brush Creek, one of the mountain streams. Up to over 10,000 feet we meet with nothing new, until, on a dry aspen-covered slope, appears a third scarlet-bracted form, *Castilleia linariæfolia*, Benth. *C. integra* var. grows at the same place, and can be distinguished from it at a glance. We will call this *C. linariæfolia* form (a.) *coccinea*, as the species is not always of this color. So we go on higher, and at about 11,000 feet is another stranger—when first I saw it, I did not even guess what it might be. But an examination in the hand, and a comparison with the *C. linariæfolia* I had gathered lower down, soon settled the matter—it was a form ‡ of *linariæfolia* with bright crimson 5-parted bracts. How strange, to find a species abundantly at one altitude, and uniformly scarlet, and to ascend perhaps 800 feet in the same gulch, and find it again—but crimson! It was one of the most striking things in variation I had ever seen, but shortly it was to be outdone in the same genus.

Close to where I had found the crimson *linariæfolia*, I came across a little family of *Castilleias* growing on a space of about two feet square—*C. pallida* forms, evidently. There were three varieties or forms, all intergrading beautifully at that very spot;

* *C. pallida acuminata* (Pursh), Britt.—*C. pallida septentrionalis*, Gray; Coult. Man. p. 284.

† CASTILLEIA INTEGRA GRACILIS: About 2 feet high, tomentose puberulent: Leaves rather inclined to be scabrous. Stem slender, erect, strong, somewhat tinged with purple. Leaves narrow, lanceolate, conspicuously 3-nerved, entire: lower cauline 58 mill. long and 9½ broad. Bracts tomentose, 3-parted, the divisions (the middle one largest) bright scarlet. Calyx about equally cleft before and behind or rather more before. Galea exerted, shorter than tube of corolla. Lip tricallous. Described from fresh specimens. Willow Creek, Custer Co., Colo., Aug. 3, 1889.

‡ *C. linariæfolia* f. *rosea* f. nov.

though perhaps if one of each had been shown to a botanist who knew nothing of variation in this genus and had never seen the intermediates, he would unhesitatingly have classed them as species. Two of the forms fell under the general definition of *C. pallida* var. *occidentalis*, Gray, having the bracts white-tipped. The first, most like ordinary *acuminata* of the valley, I will call f. *lobata*. The bracts are mostly 3-lobed, pale greenish, white at ends. The upper leaves have lateral lobes. The second may be named f. *tincta*, showing as it does the first indication of crimson-purple in this species. The lip is scarcely half the length of the galea; the bracts are broad, 5-lobed or cut and tinged with purplish. They are white at the ends. The leaves are entire. These two forms, although peculiar enough, are recognizable as varities of *pallida*. But growing with them we have the third, a shorter crimson-purple bracted plant, as different from *acuminata* as can well be—the variety *Haydeni* of Gray. With the intermediate forms growing all together, one can see how *Haydeni* may be really a variety of *pallida;* and yet compare typical *Haydeni* with typical *acuminata* of the valley, and the relation seems almost impossible. One plant tall, with pale bracts and entire leaves—the other small, its inflorescence depresssed, its bracts purple, and its leaves often much divided! It is possible, too, as one must admit, that the supposed intermediate forms *lobata* and *tincta* are really hybrids, which from reversion and variability are different in their characters. Yet *C. linariæfolia* has shown how scarlet may change to crimson without any hybridization being anyway probable, and the variation of *Haydeni* from *acuminata* is after all only the usual variation of species in this genus, carried to extremes. But again, the two forms of *linariæfolia* do not intermix, while *Haydeni* and even *acuminata* itself grow together, which favors the idea of their being distinct as species. At timber line (12,000 feet alt.), *Haydeni* is abundant while *occidentalis* sparingly occurs, and even examples of *acuminata* which I could not distinguish from those of four thousand feet below. Above timber line, the mountain side is beautifully pink with *Haydeni* in wonderful profusion. When I sat down I gathered all I could hold in my hands without moving from my seat, but, unfortunately, when pressed, they lose most

ASTER TORREYI, Porter.

of their natural beauty. On the whole, though *Haydeni* is certainly descended from *pallida*, I think we may call it a species, *Castilleia Haydeni* (Gray), while the *lobata* and *tincta* forms may be doubtfully referred to *occidentalis* × *Haydeni*—if *occidentalis* is not itself the hybrid. I feel exceedingly doubtful about this conclusion, nevertheless, for it seems to imply more free hybridization than is common.

However, hybrids or otherwise, the whole series of Custer County Castilleias shows us very plainly the effect of altitude in this genus. It acts in changing scarlet to crimson or purple, and in dividing the leaves and bracts. At extreme high altitude, dwarfing also is apparent, but this is mainly the effect of want of shelter.

A New North American Aster.

(Plate C.)

ASTER TORREYI. Stem erect, rather stout, apparently 2 to 3 feet high, reddish, puberulent; cauline leaves broadly ovate, tapering to the base, conspicuously veined, and scabrous beneath, sharply serrate, the acute apex and the tips of the serratures apiculate-mucronate; upper ones smaller, inclined to be oblong and truncate at the base; inflorescence corymbose; heads numerous, crowded on the ends of the ascending branches; bracts of the involucre ovate, obtuse, imbricated in several rows, scarious in the center, and green on the tips and along the margins, the inner slightly tinged with purple, woolly-ciliate; rays about 4 lines long; akenes sparsely hirsute.

It belongs to the same group which includes *A. Engelmanni* and *A. elegans*, and has heads of flowers much like those of the latter in all respects, although the involucral bracts are somewhat broader and more obtuse.

The single specimen from which this description is drawn was collected in 1865, by Dr. John Torrey, on a high mountain near Donner Pass, in California. Remaining in his herbarium until now, without a name, it must have been overlooked by Dr. Gray, when engaged in the study of the genus. It consists only of the upper half of the plant, of which a figure is here given, in the hope that the botanists of the Pacific Slope may be inspired to make diligent search for the re-discovery of a species so beautiful and well-marked. THOS. C. PORTER.

Botanical Notes.

Note on Viola pubescens. In connection with the statement concerning Fall-flowering violets made by Mr. A. J. Foerste, on page 267 of the October number of the BULLETIN, it may be interesting to note the occurrence of these late flowers in *Viola pubescens* as well. In this vicinity a small clump of plants of this species has been flowering with more or less perfect and conspicuous flowers at irregular intervals throughout the summer. To-day (Oct. 17th) I have noticed one of the last of these flowers. It is about one-third the size of the early flowers with color and veining distinct. The upper petals are, however, aborted to mere rudiments, while the lateral petals are reduced in size in proportion to that of the lower petal, and project in line with the sepals, rather than expand. All this agrees well with Mr. Foerste's statement above referred to. EDWARD L. RAND.

Stellaria humifusa, Rottb. On a visit to Little Cranberry Island, south of Mount Desert Island, Me., in August last, while crossing a salt marsh my attention was drawn by the vivid green of a few clumps of a Caryophyllaceous plant of a low and compact growth, with ovate, sessile and fleshy leaves. Examination showed it to be the species above named. This locality is, I believe, the most southern one yet recorded. It is an inhabitant of the arctic seas, frequently occurring on the coast of Labrador. Pringle collected it on the south shore of the St. Lawrence one hunred miles below Quebec (BULLETIN, VI, 366). Macoun quotes it from Anticosti Island, and from wet, boggy places on shore of Lake Mistassini; other observers have seen it, though rarely, in New Brunswick. Prof. Goodale collected it on the northern border of Maine on the St. John's, and now we find it on the *coast* of Maine in lat. 44° 15′. J. H. REDFIELD.

Reviews of Foreign Literature.

The Encasing of Protoplasm in reference to the Function of the Cell Nucleus.

This is the title of an article, by G. Haberlandt, in the Journal of the Vienna Academy of Science, in which some peculiar cellulose growths are studied in regard to their probable connection with the action of the nucleus. Klebs succeeded in dividing

the protoplasmic body of the cells of certain plants in two halves, one of which contained a nucleus and the other lacked this. This was done by plasmolytic agencies. Haberlandt undertook to find out whether some such action did not take place in certain cases without artificial agency. The first objects of study were the hairs of different Cucurbitaceæ.

In the short hairs of *Bryonia* leaves it was found that frequently in the process of the secondary cell wall thickening, as it is called in Germany, the protoplasmic body was separated in two halves, about equal. The one contained a nucleus, the other was without one. Now, when new cellulose coats were formed, only that part of the protoplasm containing a nucleus was found to participate in this process. Even when the cellulose ring did not form an entire wall, but grew toward the center of the cell so far as to nearly separate the two portions of protoplasm, that portion containing the nucleus had the power of making a new cellulose coat, so as to entirely encase itself from the other half. Also, in hairs whose whole length was covered by a cell wall of nearly uniform thickness, the protoplasmic body was often separated in two unequal portions, by the part holding the nucleus surrounding itself with one or more cellulose coats. This, he says, is exactly analogous to the process occurring in the bast cells of Asclepiadeæ and Apocynaceæ, as described by Krabbe. He traced the same occurrence in the hairs on the under side of the leaves of *Sicyos angulatus* and *Momordica Elaterium*. The encasing in cellulose does not depend on the size of the protoplasmic body, but on its possession of a nucleus.

In the work referred to by Krabbe, the author compares this process of cell-formation within a cell to the formation of ascospores, and in this later work by Haberlandt this view appears to be fully established. The work of Krabbe was done to prove certain theories in regard to the manner of growth of cell wall, and, as such, deserves a separate review. The work of Haberlandt, on the other hand, has special reference to the action of the nucleus in the formation of new membrane. E. L. G.

Capture of insects by Utricularia.

In the "Berichte der Deutschen Botanical Gessellschaft," is an article by M. Büsgen, on the manner and meaning of the capture of insects by *Utricularia vulgaris*.

Experiments were made by feeding plants 15 centimeters long, containing about 15 leaves each, with 6 bladders, with a certain animal, *Chydorus sphæricus*. About 270 of these were fed each plant, and their progress of growth compared with that of other similar plants equally well provided for, except they were carefully prevented from obtaining animal diet. The results proved that the plants fed with animals grew nearly twice as fast as those which were not able to obtain this food.

The manner in which the animals find their way, unassisted, into the bladders is also described. There is nothing specially new in this except, perhaps, the presence of bacteria on the secreting hairs. The lid of the bladder opens by means of the pressure on its surface, and closes quite suddenly, thus capturing the unlucky animal, and, after its death, bacteria proceed to destroy its remains. E. L. G.

Sur les procédés employés par les Japonais pour obtenir des Arbres nains; par M. P. Maury. (Bull. Soc. Bot. d. France, xxxvi. 290-294.)

The Japanese exhibit of dwarfed plants at the Paris Exposition has attracted a good deal of attention. In this article illustrations are given of *Pinus Japonica* one hundred years old; *Ginkgo biloba*, sixty years; *Cephalotaxus*, ninety years, and *Nandina domestica* seventy years old—each of them in ordinary window pots. The method described is the following: The seeds are sown in very small pots, and the young plants allowed to grow till their roots having absorbed all the earth (toute la terre) which they contain, completely replacing it, and escaping in search of a soil more vast. They are then re-potted to others but slightly larger, and the operation is repeated indefinitely. This practice seems to be the most important of those employed by the Japanese horticulturist. Forced in this way to a slow development, by insufficient nourishment and moisture—for even this is deprived them—the trunk is atrophied. Under these circumstances coniferous trees, especially, remain dwarfed in size. To train them into compact and shapely forms, the branches are bound together by bamboo fibres. E. G. B.

Les Plantes Aquatiques Alimentaires. A. Paillieux et D. Bois,

(Bulletin Bimensuel de la Soc. Nat. D'Acclimatation de France, December 5, 1888).

In this pamphlet of thirty-one pages the authors treat of the following edible plants: *Aponogeton distachyum* and ten other species of the genus; *Ouvirandra fenestralis; Trapa bicornis, T. bispinosa* and *T. natans*, var.; *Nelumbium speciosum* and *N. luteum*; *Euryale ferox; Nuphar multisepalum; Nymphæa Lotus, N. edulis, N. rubra, N. cærulea* and *N. Rudgeana; Eleocharis tuberosa; Sagittaria sagittæfolia, S. Sinensis* and *Œnanthe stolonifera*. Of these the synonyms and common names are given with a short description and notes on habitat, cultivation, uses and geographical distribution. In many cases they have been cultivated or become naturalized in France, and the information given is full and reliable, in others, it is quoted or is meagre. The authors desire for cultivation specimens of *Sagittaria variabilis*. E. G. B.

Histoire d'un nouveau Légume. A Pailleux et D. Bois. (Rev. Sci. Nat. Appl., Nos. 12, 13, 1889).

The tubercles of *Stachys affinis*, Bruge, have been introduced into cultivation by M. Paillieux, who considers them the third new vegetable of the century and has done all in his power to create a demand for them in the market under the name of "Crosnes du Japon." They have been used for pickles and salads and are recommended for invalids and those of delicate digestion, because of the large percentage (.76) of hydro-carbons in the form of galactane. The flavor and nature of these rhizomes seems to be similar to that of the artichoke. The plant is native of eastern Asia and known also as *S. tuberifera*.

Index to Recent American Botanical Literature.

Algæ of Maine—The Freshwater. William West. (Journ. Bot. xxvii. 205–207).

One new species, (*Sphærozosma Aubertianum*), and two new varieties, (*Micrasterias pinnatifida*, Ralfs., var. *trigona*, and *Staurastrum angulatum*, W. West, var. *subangulatum*), are described.

Algæ of the West Indian Region—Catalogue of the Marine. Geo.

Murray. (Journ. Bot. xxvii. 237-242; 257-262; 298-305, concluded).

In addition to the catalogue of species, a table showing the distribution and a list of authorities is appended.

Atacama—Botanische Reise nach der Provinz in 1885. R. A. Philippi. (Verhand. Deutsch. wiss. Verein Santiago, 1888, 214-221).

Bald Cypress—The knees of the; a New Theory of their Function. R. H. Lamborn. (Garden and Forest, iii. 21, 22, fig. 4).

The much discussed question as to the function of the "knees" of *Taxodium distichum* here receives another contribution. The author advances the very plausible theory that they serve to strengthen the angle where the roots change their direction from a horizontal to a more or less vertical one. As these roots undoubtedly act in the capacity of anchors to hold the trees steady in the soft and yielding soil where they grow, the above hypothesis seems entirely within reason. The significant fact is mentioned that the Bald Cypress seldom, if ever, is known to be prostrated by the wind, in spite of its apparently insecure place of growth. It is also suggested that the knees may serve the purpose of arresting drift material, and holding it until it decays and becomes food for the roots of the trees to absorb. The author considers the theory that they are aerating organs as yet unsubstantiated.

Bulletin of Miscellaneous Information—Royal Gardens, Kew, 1889. (8vo. pp. 306. London, 1889).

Contains much that is of interest to American botanists. Under the caption Coca are full descriptions, with figures, of *Erythroxlyon Coca* and *E. Coca*, var. *Novo-Granatense*, and brief notes upon other species of the genus. Two memoranda are given upon the Yam Bean (*Pachyrhizus tuberosus*), one of which is illustrated. The short-podded Yam Bean (*P. angulatus*) is also figured. *Zizyphus chloroxylon*, the Jamaica cogwood, is figured, and its bibliography given. Considerable space is occupied by the description of the economic values of *Attalea funifera; Cinchona, Agave rigida*, var. *Sisalina*, and several others. In the list of hardy annual and perennial herbaceous plants which have perfected seeds at the Gardens are a large number of our

well-known North American species, and the same may be said of their list of newly-introduced garden plants, among which may be noted *Amelanchier alnifolia, A. oligocarpa, Antirrhinum Nuttallianum, Aquilegia longissima, Camassia Cusickii, Convolvulus Californicus, Erythronium Hendersonii, Oxybaphus Californica, Smilax rotundifolia, Vitis indivisa*, etc. Under the heading, "Guide to the Botanical Literature of the British Empire," will be found lists of the works relating to, or in which reference is made to the botany of the British Possessions in the Western Hemisphere—a very useful compilation.

Champignons de Venezuela et principalement de la Region du Haut Orénoque recoltes en 1887 *par M. A. Gaillard.* N. Patouillard and A. Gaillard (Soc. Mycol. France iv. Fasc. 2, 7–46, Pl. VI-XIII; from Bot. Centralb. xxxix. 121).

Chenes de l'Amerique septentrionale en Belgique. J. Houba (8vo. pp. 329, Hasselt, 1887).

Cottonwood. (*Populus monilifera*, Ait.) *Observations on the*, Albert F. Woods. (Bull. No. 11, Agric. Exp. Sta. of Neb. 93-97).

An attempt is here made to differentiate between the male and female trees, by other than the usual sexual characteristics. The tables of observations on times of leafing and defoliation and number of lateral and terminal buds are not devoid of interest, and the entire article shows considerable care in its preparation. but the net results may be best stated in the author's own words, viz.: "There are therefore, no observable secondary sexual characters, and it is safe to say that the sex of cottonwoods cannot be determined until they begin to bear fruit." It should be remarked, however, that the author does not class the appearance and dropping of leaves as a *secondary* characteristic. The fact that the female tree is the last to leaf and the first to drop its leaves, is considered as due to the expenditure of vital force in perfecting its fruit, hence it is a *primary* characteristic! It seems as if considerable latitude might be given to the definition of primary characteristics, and their number be greatly increased under such a ruling.

Cypress.—The Deciduous. (Garden and Forest, iii. 2, Fig. 2).

Contains a discussion of "knees" and other phenomena in

connection with *Taxodium distichum*, and a characteristic view of a swamp in Southern Indiana.

December.—A mild. (Garden and Forest, iii. 11).

Several contributions under this heading announce the flowering of plants out of season, from many widely separated sections of the country. Similar communications appear in the following issue, and finally the editors are obliged to say: "We have received many letters, for which we have no further space, from correspondents who give lists of flowers blooming out of their season. But with bluets (*Houstonia cærulea*) flowering by New England roadsides, *Anemone blanda* opening in the suburban gardens of this city, and dandelions starring the turf everywhere the day after New Years, it is safe to pronounce this an exceptional winter."

Economic Fungi.—Announcement and Contents of Fascicle. A. B. Seymour and F. S. Earle. (Cambridge, Mass., January 1, 1890).

The announcement is made that a series of fascicles of fungi of economic importance are to be prepared, to illustrate the diseases of noxious and useful plants. Each fascicle is to be given a distinctive character, and will be prepared either loose or in book form. Fascicle I, containing 50 species, is now ready for distribution, at $3.00 or $3.50, according to method of preparation.

Euphorbiaceous Plants collected by Mr. T. S. Brandegee in 1889 *on the mainland of Lower California and the adjacent islands of Magdalena and Santa Barbara.* C. F. Millspaugh. (Proc. Cal. Acad. Sci. (II), ii. 217-230; reprint, issued December 17, 1889).

In this "Contribution to North American Euphorbiaceæ, I," Dr. Millspaugh enumerates 41 species and varieties, of which the following are described as new: *Phyllanthus Brandegei; P. ciliato-glandulosus; Croton Magdalenæ; Argythamnia Brandegei; A. serrata*, var. *Magdalenæ; A. sericophylla*, var. *verrucosemina; Acalypha Comunduana; Bernardia viridis; Euphorbia Purisimana; E. Brandegei; E. pediculifera*, var. *minor; E. conjuncta; E. involuta; E. geminiloba; E. Comunduana; E. heterophylla*, var. *eriocarpa*. There are also critical notes on

many other species. If this order serves as an index to the rest of Mr. Brandegee's collection, it must be wonderfully rich in novelties. N. L. B.

Fittonia argyroneura. W. H. G. (Garden xxxvi, 527, illustrated).

Flora of the Northern Shores of America.—Remarks on, with Tabulated Observations made by Mr. F. F. Payne, on the Development of Plants at Cape Prince of Wales, Hudson Strait, during 1886. Geo. Lawson. (Trans. Roy. Soc. Canada; Sec. iv. 1887, reprinted).

In the list of plants collected, numbering 66 species, will be found many which are familiar to all who have collected in the Northern United States and in our eastern mountain regions, such as *Vaccinium Vitis-Idæa, V. uliginosum, Diapensia Lapponica, Pyrola minor, Rhododendron Lapponicum, Salix herbacea, Saxifraga oppositifolia,* etc., and a few which are known at the sea level in our own neighborhood, such as *Cerastium vulgatum, Honkenya peploides, Eriophorum polystachyon* and *Cystopteris fragilis.*

Flowers and Insects. III. Chas. Robertson. (Bot. Gaz., xiv, 297-304).

Notes are given upon the habits and effects of bird and insect visitors upon *Nelumbo lutea, Dentaria laciniata, Geranium maculatum, Impatiens aurea, I. biflora, Staphylea trifolia* and *Ceanothus Americanus.*

Fungi of Economic Interest.—Notes on; Observed in Lancaster County, Nebraska, during the summer of 1889. Roscoe Pound. (Bull. No. 11, Agric. Exp. Sta. of Nebraska, 83-91).

The author states that "the popular idea, and one which one constantly encounters in conversing with those who suffer from the damage done by these fungi, namely, that they are more abundant in wet seasons than in dry ones, has not been confirmed by my observations." Three lists are given, one of injurious fungi, numbering 64 species; one of those which are harmless so far as observed, numbering 5; and one of beneficial fungi, numbering 6. Under the latter heading the intention is evidently to describe the species which are beneficial to economic botany—not to the hosts. Thus "*Botrytis tenella,* Sacc. On "June

Bugs" (*Lachnosterna*) and several caterpillars. Often kills large numbers of them."

Garden Vegetables.—History of. E. L. Sturtevant. (Am. Nat. xxiii. 665-677).

We are pleased to again welcome the author's contributions to this subject. In this paper he treats of the Lima Bean, (*Phaseolus lunatus, L.*), Lovage, (*Ligusticum levisticum, L.*), Mallows, (*Malva crispa,* L.), Marigold, (*Beta vulgaris,* var.), Martynia, (*Martynia proboscidea,* Glox., and *M. lutea,* Lindl.), Melon, (*Cucumis melo,* L.), Mint, (*Mentha viridis,* L.), Mugwort, (*Artemisia vulgaris,* L.), and Mustard, (*Sinapis alba,* L., *S. nigra,* L., *S. brassicata,* L., *S. Chinensis,* L , and *S. Pekinensis,* Lour).

Goniograptus Thureani, McCoy, from the Levis Formation.—Additional Notes on. Henry M. Ami. (Can. Rec. Sci. iii. 502, 503, illustrated).

Grasses and Forage Plants of the United States, and such Foreign Kinds as have been Introduced.—The Agricultural. George Vasey. (Special Bull. Bot. Divn. U. S. Dep't Agric., Washington, D.C., 1889).

This profusely illustrated report begins with an account of the grasses, 99 of which are figured. Amongst the forage plants other than grasses may be noted *Opuntia Engelmanni, Erodium cicutarium, Eurotia lanata,* besides the *Trifoliums, Medicagos,* and other allied plants, all figured. Excellent plates are also given, under the heading "General Description of Grasses," of roots and rhizomes; sheaths, ligules and blades; inflorescence and dissections of flowers.

Hickory Matter.—In the. N. L. Britton. (Garden and Forest, ii. 621, 622). A communication, with editorial comment.

Palæontology of the Plains, No. 1—Contributions to the. F. W. Cragin. (Bull. Washburn Coll. Lab. Nat. Hist., ii. 65-68).

Cycadoidea munita is described as a new species, intermediate between *C. megalophylla* and *C. microphylla.*

Relation of the Flora to the Geological Formation in Lincoln County, Kentucky—The. Harry A. Evans. (Bot. Gaz. xiv. 310-314).

This is a contribution along a line of investigation to which too little attention has been paid. The relations between any

geological formations and their accompanying floras are of value and are often of unexpected interest. The author is working in a field of research which ought to bring forth good results.

Rusts and Smuts of Nebraska—A Preliminary Enumeration of the. (Bull. No. 11, Agric. Exp. Sta. of Neb., 37-82).

One hundred and nineteen rusts and twenty smuts are enumerated, to which is appended an index to all the host plants mentioned.

Sequoia—The Great. Chas. H. Shinn. (Garden and Forest, ii. 614-615).

The author here gives the early history of the discovery of the "big trees" and the rapid rate at which they are now being destroyed for commercial purposes.

Smut in Oats—Preliminary Report on. (Bull. No. 8, Kans. State Agric. Coll. Exp. Station, Oct. 1889).

Ustilago segetum, (Bull.) Ditm. is described and figured, as is also the striking smut, *Tilletia fœtens,* (B. and C.) Trel. which affects wheat.

Smut of Indian Corn—The. C. E. Bessey. (Bull. No. 11. Agric. Exp. Sta. of Neb., 25-35, figs. 8 and 9).

Ustilago maydis is figured.

Smut of Wheat and Oats—The. J. C. Arthur and Chas E. Bessey. (Bull. No. 11, Agric. Exp. Sta. of Neb., 1-23, figs. 1-7). *Tilletia fœtens* and *Ustilago segetum* are figured.

Station Botanists at Washington—The. Byron D. Halsted. (Bot. Gaz. xiv. 305-309).

This is the report of the Secretary of the Botanical Committee of the Association of American Agricultural Colleges and Experiment Stations, for the meeting held at Washington, D. C., November 12-15, 1889.

Sugar Producing Plants. Wilford Skaife. (Can. Rec. of Sci. iii. 455-475).

An historical account of sugar-making from the earliest times, the plants used and methods employed.

Theobroma cacao. (Le Nat. Canadien, xix. 113, fig. 15).

Ueber Brasilianische Kletterstraucher. H. Schenck. (Verhand. Naturw. Verein der Rheinl., 1889).

Viburnum pauciflorum. C. S. S. (Gard. and Forest, iii. 4 fig. 1).

Wet Mountain Valley, Colorado—Contributions Toward a List of the Fauna and Flora of. T. D. A. Cockerell. (West Am. Sci. vi. 153-155).

In this contribution the author lists thirty-one Algæ, nine Pteridophyta and four Gymnospermæ.

Proceedings of the Club.

The annual meeting was held Friday evening, January 14th, 1890, the Vice-President in the chair, and 21 persons present.

Prof. Byron D. Halsted, Mr. John K. Small, Miss Anna M. Vail, and Mr. F. von Wilmowsky were elected Active Members.

The deaths of Mr. James Hogg and Dr. W. DeForest Day, two of the incorporators of the Club, were announced by the Secretary, and a committee was appointed to draw resolutions expressive of the sentiments of the Club.

Dr. Rusby, on behalf of the Field Committee, read a final report of the season's work.

Mr. Hollick, Seeretary of the Botanic Garden Committee, read a report of progress. The Committee was continued.

Reports of the officers were read and accepted. The editors presented the following

Special Report on the Bulletin.

On the completion of the 20th year of publication of the Bulletin the Editors consider it desirable that a statement of the progress of that journal from its beginning should be publicly made, as well as of its present prospects and needs. While the main facts of its history are familiar to some of the older members to those who have recently come into the Club they will be new and will therefore be of especial interest.

The first number was published in January, 1870, consisting of four pages issued by Mr. William H. Leggett. While bearing the name Bulletin of the Torrey Botanical Club, it was actually a private venture on the part of that earnest and enthusiastic botanist, for at that time the Club had no legal organization. Mr. Leggett stated in his salutatory that its object "was primarily to form a medium of communication for all those interested in the Flora of this vicinity and thus to bring together and fan into a flame the sparks of botanical enthusiasm at present too much isolated,

* * * We hope to have no lack of interesting communications, not only from deep investigators, but from all those who meet with interesting facts, for we wish it to be distinctly understood that we have chiefly in view the development of a greater botanical interest in our neighborhood and found our hopes of success as much upon learners as upon the learned. While the BULLETIN will be chiefly devoted to the local Flora of New York, it will not exclude matters of general botanical interest, of which we hope correspondents will keep it informed." The matter of financial support was thus alluded to. "We suppose that we can supply each of thirty subscribers at five dollars a year with ten copies, but must wait for a little experience. If we find it favorably received we are not without hope of ensuring it a permanency, which of course, it ought to have. But of this we purpose to speak hereafter."

A new catalogue of the plants within thirty-three miles of New York was proposed, as well as an herbarium to illustrate it. Both were immediately begun, the first portions of the catalogue being printed in the second number, where the terms of ordinary subscription were fixed at one dollar per annum.

The publication was continued monthly throughout the year, 48 pages completing Volume 1. The result of the experiment is best given in the language of the Editor, as printed in January, 1871. "The present number completes the second year of our publication. The interest shown in it augurs well for its future. Thanks to its friends—some warm ones outside of the Club—it will not fall very far short of paying expenses. When there is a permanent fund of from three to five thousand dollars, as we count there will be some day, it will be insured a permanency. Meanwhile it will be continued at the present rates."

Printing was regularly proceeded with, not with any great financial encouragement, however, for in February, 1872, it was stated "Our expenses for the first two years exceed our income $53. 33." The third volume ran to 56 pages. The Local Catalogue was given greatest prominence, although other matter was beginning to claim space. In January, 1873, the Editor remarked: "THE BULLETIN is now entering upon its fourth year, and we know has been of service in bringing the students of

Botany throughout the country into communication with each other. Our receipts do not yet quite cover our expenses. It is our ambition to enlarge our little publication and make it permanent. To do this there is need of funds. * * An endowment of about $3, 000 would enable us, with our present list of subscribers, to double the number of pages, and perhaps, add some much needed illustrations." The subject was again alluded to in July of the same year, at the time of the final organization of the Club, and again in December. The fourth volume reached about the same size as its predecessors, and the first five volumes were completed in December, 1874.

Meanwhile the Local Catalogue had been extended as far as *Carex*. The difficulty of obtaining correct and reliable reports on the Gramineæ caused its suspension, although the list of Carices and a few grasses appear in the first number of Vol. vi., as a supplement, issued, however, at a long subsequent date. But more general matter was crowding in and there was no lack of it. The next five years were allowed to run on as one volume (Vol. vi.) reaching 379 pages, an average of about 76 pages annually. The publication fund hoped for by its founder was not secured and it is needless to remark that it never has been.

But the object sought by Mr. Leggett had in a large degree been attained. He had "fanned into a flame the sparks of botanical enthusiasm" and excited such a widespread and increasing interest in his loved science that in the increase of subscriptions the BULLETIN could be materially enlarged. Vol. vii. reached 128 pages; Vol. viii., 144 pages. In January, 1882, at the beginning of Vol. ix., the journal was first formally adopted as the organ of the Club, and at the same time the Editor's labors were divided by the election of an associate, Mr. W. R. Gerard, and to him fell the duty of completing that volume alone, for the morning of April 11th witnessed the death of the genial, talented and earnest editor.

Mr. Leggett's services to American Botany have never yet been suitably recognized. It is believed by those who have recently conducted the BULLETIN—and we know that this belief is shared by many others—that this journal was the prime mover in exciting and developing the deep botanical interest which is so

prominent a feature in American Science of to-day. It was entirely his creation and the amount of time taken from his busy life and devoted to it can never be fully appreciated. It is his monument, and it should ever be our endeavor to make it a worthy one.

This ninth volume reached 156 pages; Vol. x., ran to 136 pages, and was edited by W. R. Gerard, and N. L. Britton; Vol. xi., by W. R. Gerard and Benjamin Braman, 140 pages; Vol. xii., by the same editors, 136 pages. Meanwhile the number of illustrations had been gradually increasing, and had now become quite an important feature.

Vol. xiii. was edited by Elizabeth G. Britton and F. J. H. Merrill. The style of the journal was here materially changed, a more open type adopted and the number of pages increased to 252. The "Index to Recent American Botanical Literature" was begun, which has since become so important a feature of the BULLETIN. Vol. xiv. was conducted by Elizabeth G. Britton, Jos. Schrenk, F. J. H. Merrill, H. H. Rusby and C. Henry Kain, and reached 268 pages. Vol. xv., by the same staff, with the addition of Emily L. Gregory and the substitution of Arthur Hollick for Mr. Merrill, and ran to 328 pages. Vol. xvi. has been edited by N. L. Britton with the same staff of associates and has reached 340 pages, an average of over 28 pages monthly, or seven times its original number.

This increase in size and importance has been effected solely by the large subscription list. The BULLETIN has never paid for itself, however; there has been a regular shortage of from 6½ to 25%. The present editors believe that it has, however, now reached its maximum size with the present apparent resources, and that unless these are increased no further enlargement can be made for a number of years. But they are faced with an increasing demand for its space, for it has become the most popular organ of botanical publication in America. More illustration is also urgently needed and should be supplied.

Under these conditions there appear to us three alternatives:

1. To continue the publication on the present lines, or perhaps with some retrenchment;

2. To obtain the publication fund hoped for by its founder;

3. To increase its price to subscribers not members of the Club.

We respectfully request that the Club consider these important questions and instruct its editors, for although given power under the Constitution to distribute the publications at their discretion, the responsibility entailed at the present time should not be assumed without further action by the Club.

It was resolved that a committee be appointed by the President to consider the report of the editors, and recommend action by the Club.

The following officers for the ensuing year were elected :— President: Hon. Addison Brown; Vice-President: Thomas Hogg; Treasurer: Dr. W. E. Wheelock; Recording Secretary: Maria O. Steele; Corresponding Secretary: Helena C. Gaskin; Curator: Josephine E. Rogers; Librarian: M. L. Delafield, Jr.; Editor: Dr. N. L. Britton; Associate Editors: Dr. Emily L. Gregory, Prof. Jos. Schrenk, Dr. H. H. Rusby, Prof. C. Henry Kain, and Arthur Hollick.

Mr. Hollick reported *Draba verna* in flower on Staten Island, December 30th, and Dr. Rusby *Erodium cicutarium* in northern New Jersey, Dec. 25th.

The second January meeting was held on the 29th. President Brown in the chair, and 36 persons present.

Mr. Hogg announced the death of Mr. Peter V. LeRoy, one of the incorporators of the Club, and remarked on his botanical work.

The following papers were then read, as announced :—

"Observations on *Utricularia*," by Mr. Bashford Dean.

"Notes on Plants collected in Ontario, Canada, August and September, 1889," by Mrs. Britton and Miss Timmerman.